



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,919	01/29/2004	Jun Hatakeyama	0171-1058P	4118
2292	7590	01/06/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			LEE, SIN J	
			ART UNIT	PAPER NUMBER
			1752	

DATE MAILED: 01/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/765,919	HATAKEYAMA ET AL.	
	Examiner Sin J. Lee	Art Unit 1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 18 October 2005.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-13 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-13 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 29 January 2004 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1-29-04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

1. Upon reconsideration, previous restriction requirement made on present claims 1-13 on October 5, 2005 is hereby withdrawn, and thus all claims 1-13 were searched and considered in this Office action.

Claim Rejections - 35 USC § 103

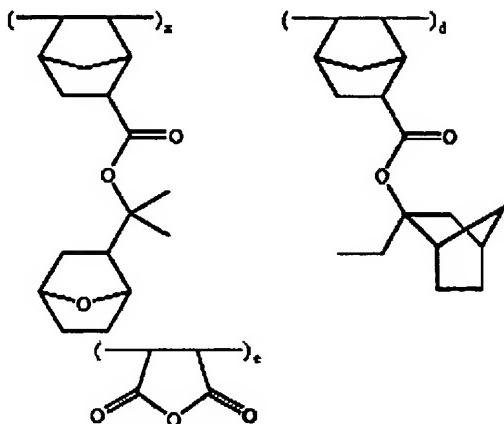
2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, 5 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al (US 2002/0132182 A1) in view of Hatakeyama et al (JP 2001-278918 and its DERWENT English abstract).

In Example II-2, Nishi et al teaches (see Table 2) a resist material containing Polymer 2, an acid generator, a basic compound and a solvent. Nishi also teaches the use of a dissolution controller in his resist material ([0144]). After the resist material is spin-coated onto a silicon wafer and then heat-treated to form a resist film, the resist film is exposed to KrF excimer laser and then heat-treated. Then, the exposed resist film is developed to obtain a resist pattern (see [0211]). The structure for Polymer 2 is shown below (see [0201]):

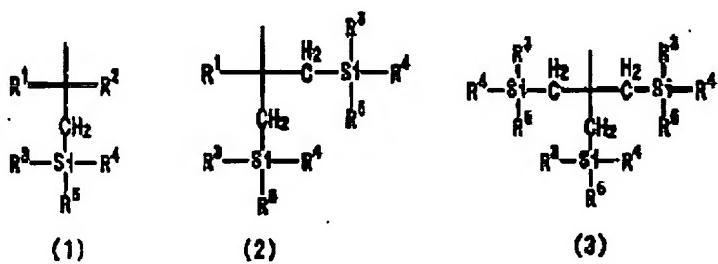
Art Unit: 1752



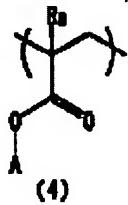
(Polymer 2)
($x = 0.15, d = 0.35, e = 0.50, M_w = 7,000$)

Therefore, Nishi teaches present inventions of claims 1, 2, 4 and 7-13 except for the present recurring units containing silicon.

Hatakeyama teaches (see DERWENT abstract) that polymers comprising one or more Si-containing substituents of formulas (1)-(3) (see the first page of the Japanese document) provides a chemically amplified positive type resist material, which is excellent in sensitivity, resolution and oxygen plasma etching resistance at wavelength of 300 nm or less. The formulas (1)-(3) are shown below (see also (4)-(9) in which A represents the formulas (1), (2) or (3)):



Based on Hatakeyama's teaching it would have been obvious to one skilled in the art to incorporate a recurring unit, such as the one with formula (4) shown below

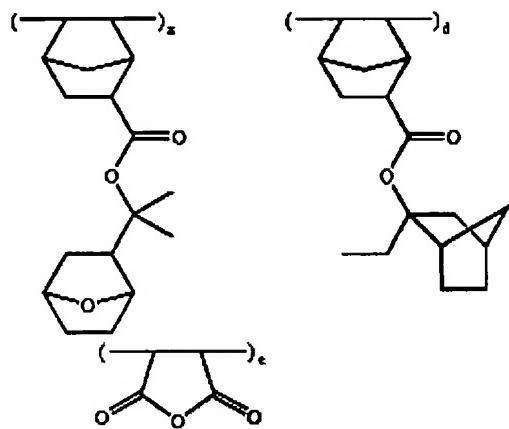


in which A represents any one of those formulas (1)-(3), into Nishi's Polymer 2 in order to obtain a chemically amplified positive type resist material, which is excellent in sensitivity, resolution and oxygen plasma etching resistance at wavelength of 300 nm or less. Therefore, Nishi in view of Hatakeyama would render obvious present inventions of claims 1, 2, 4, 5 and 7-13.

4. Claims 1, 2, 4 and 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al (US 2002/0132182 A1) in view of Takeda et al (US 2002/0168581 A1).

In Example II-2, Nishi et al teaches (see Table 2) a resist material containing Polymer 2, an acid generator, a basic compound and a solvent. Nishi also teaches the use of a dissolution controller in his resist material ([0144]). After the resist material is spin-coated onto a silicon wafer and then heat-treated to form a resist film, the resist film is exposed to KrF excimer laser and then heat-treated. Then, the exposed resist film is developed to obtain a resist pattern (see [0211]). The structure for Polymer 2 is shown below (see [0201]):

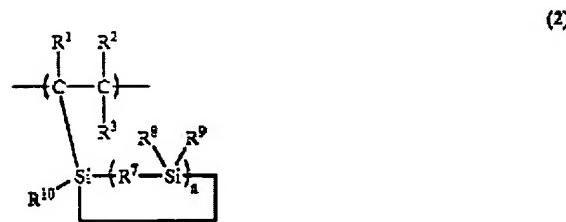
Art Unit: 1752



(Polymer 2)
($x = 0.15, d = 0.35, e = 0.50, Mw = 7,000$)

Therefore, Nishi teaches present inventions of claims 1, 2, 4 and 7-13 except for the present recurring units containing silicon.

Takeda teaches (see [0011] and [0013]) that polymers comprising recurring units of the following general formula (1) and/or (2)



provides a chemically amplified positive type resist material having a high sensitivity and high resolution. Therefore, it would have been obvious to one skilled in the art to incorporate the recurring units of formula (1) or (2) into Nishi's Polymer 2 in order to

obtain chemically amplified positive type resist material having a high sensitivity and high resolution. Therefore, Nishi in view of Takeda would render obvious present inventions of claims 1, 2, 4 and 6-13.

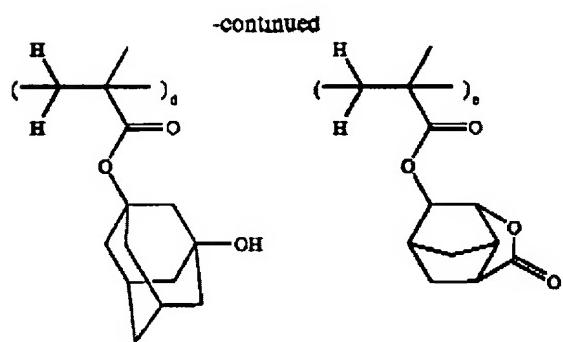
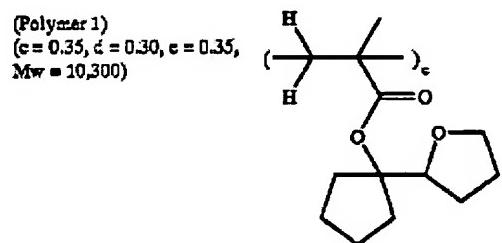
5. Claims 1-5 and 7-13 are rejected under 35 U.S.C. 103(a) as being obvious over Hasegawa et al (US 2004/0068124 A1) in view of Hatakeyama et al (JP 2001-278918 and its DERWENT English abstract).

The applied reference has a common assignee with the instant application.

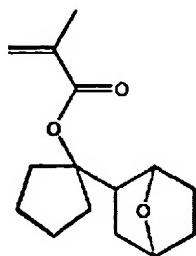
Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Art Unit: 1752

In his Example 1 (see [0629] and [0627]), Hasegawa teaches a resist composition containing Polymer 1, a photoacid generator, a basic compound and a solvent. Hasegawa's Polymer 1 is shown below:



Hasegawa also teaches the equivalence of the first recurring unit shown above with a recurring unit made from the following monomer (see [0034]):

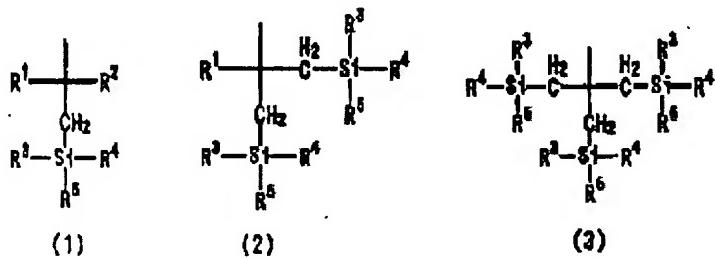


Hasegawa also teaches ([0379]) the use of a dissolution inhibitor in his composition. Hasegawa spin-coats his composition onto a silicon wafer (on which an anti-reflection film has been coated) and bakes the wafer to form a resist film. The resist film is

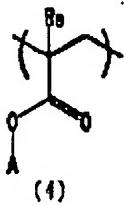
Art Unit: 1752

exposed to ArF excimer laser, then heat-treated and developed to give a resist pattern (see [0630]). Therefore, Hasegawa teaches present inventions of claims 1-4 and 7-13 except for the present recurring units containing silicon.

Hatakeyama teaches (see DERWENT abstract) that polymers comprising one or more Si-containing substituents of formulas (1)-(3) (see the first page of the Japanese document) provides a chemically amplified positive type resist material, which is excellent in sensitivity, resolution and oxygen plasma etching resistance at wavelength of 300 nm or less. The formulas (1)-(3) are shown below (see also (4)-(9) in which A represents the formulas (1), (2) or (3)):



Based on Hatakeyama's teaching it would have been obvious to one skilled in the art to incorporate a recurring unit, such as the one with formula (4) shown below



in which A represents any one of those formulas (1)-(3), into Hasegawa's Polymer 1 in order to obtain a chemically amplified positive type resist material, which is excellent in sensitivity, resolution and oxygen plasma etching resistance at wavelength of 300 nm or

Art Unit: 1752

less. Therefore, Hasegawa in view of Hatakeyama would render obvious present inventions of claims 1-5 and 7-13.

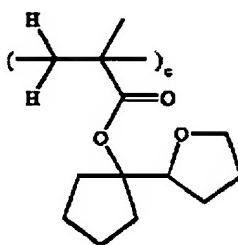
6. Claims 1-4 and 6-13 are rejected under 35 U.S.C. 103(a) as being obvious over Hasegawa et al (US 2004/0068124 A1) in view of Takeda et al (US 2002/0168581 A1).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

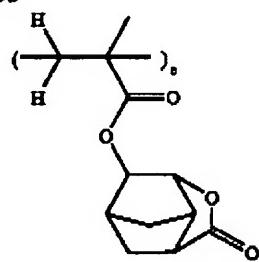
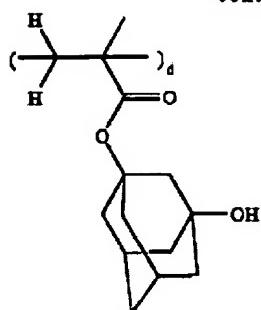
In his Example 1 (see [0629] and [0627]), Hasegawa teaches a resist composition containing Polymer 1, a photoacid generator, a basic compound and a solvent. Hasegawa's Polymer 1 is shown below:

Art Unit: 1752

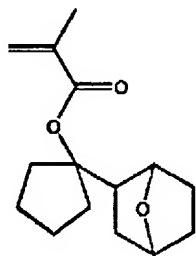
(Polymer 1)

 $c = 0.35, d = 0.30, e = 0.35,$
 $M_w = 10,300$ 

-continued



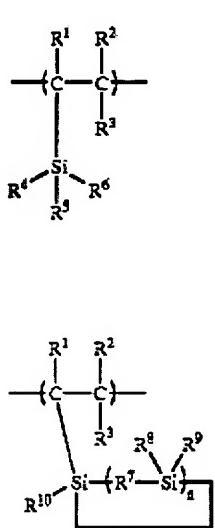
Hasegawa also teaches the equivalence of the first recurring unit shown above with a recurring unit made from the following monomer (see [0034]):



Hasegawa also teaches ([0379]) the use of a dissolution inhibitor in his composition.

Hasegawa spin-coats his composition onto a silicon wafer (on which an anti-reflection film has been coated) and bakes the wafer to form a resist film. The resist film is exposed to ArF excimer laser, then heat-treated and developed to give a resist pattern (see [0630]). Therefore, Hasegawa teaches present inventions of claims 1-4 and 7-13 except for the present recurring units containing silicon.

Takeda teaches (see [0011] and [0013]) that polymers comprising recurring units of the following general formula (1) and/or (2)



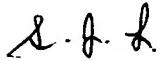
provides a chemically amplified positive type resist material having a high sensitivity and high resolution. Therefore, it would have been obvious to one skilled in the art to incorporate the recurring units of formula (1) or (2) into Hasegawa's Polymer 1 in order to obtain chemically amplified positive type resist material having a high sensitivity and high resolution. Therefore, Hasegawa in view of Takeda would render obvious present inventions of claims 1-4 and 6-13.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

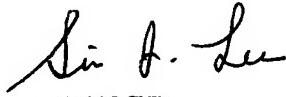
Art Unit: 1752

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
December 25, 2005


SIN LEE
PRIMARY EXAMINER